# THE VETERINARY RECORD

**A Weekly Journal for the Profession.**

Edited by WILLIAM HUNTING, F.R.C.V.S.

No. 951. SEPTEMBER 29, 1906 VOL. XIX

## UNIVERSITY HONOURS.

The celebration of the Quarter Centenary of the foundation of Aberdeen University has occupied a prominent position in this week's doings. The granite city has probably never before been so gay, and certainly never so crowded with learned and eminent men. Thousands of invitations were issued for the celebration, and scholars from all the ends of the earth thronged the streets. Hundreds of delegates from Universities and Colleges have flocked to Aberdeen to pay homage to their Alma Mater, or to receive honours from this ancient place of learning. Lord Strathcona, the Chancellor, in his speech after the ceremony of conferring the degrees, said "We are seeking to mark our appreciation by conferring the highest honours which it is in our power as a University to bestow on men who have won distinction in the fields of scholarship, science, and literature, and in the public service."

Among all this array of talent we rejoice to note that the veterinary profession is not unrepresented. In the long list of eminent men upon whom the LL.D., Doctor of Laws, degree was conferred is the name of—Sir John M'Fadyean, Principal of the Royal Veterinary College, London. This will be very grateful to the veterinary profession because we all believe that no man on the list has more truly earned University honours by hard and good work than Sir John M'Fadyean. It is pleasing also because it removes that pessimistic notion that a veterinary surgeon could not hope for the recognition which other professions obtain. We only want the men and their work to get what others get.

## INHALATION AND INGESTION.

The very interesting paper on "Infection in Tuberculosis" read by Professor Mettam before the Veterinary Medical Association of Ireland contains much that is instructive—nothing more so than his remarks upon the method of spread of the disease. Well directed measures for prevention depend greatly upon a right understanding of how disease invades an animal and how it spreads from one animal to another. When it was believed that malaria infected by inhalation of a vapour there was small chance of any reliable prevention. Now that we know it spreads through inoculation by mosquitos we are on the right way to prevention.

If we believe that tuberculosis is mainly spread by inhalation we direct our attention chiefly to ventilation and the dangers of dried sputum—as our friends the doctors do.

If we believe that the disease spreads by ingestion of the living bacteria we naturally look for prevention to the dangers of food and infected feeding utensils.

Reasoning from analogy is no doubt dangerous, but we have for years past assumed that glanders was spread by ingestion and not by inhalation. As tuberculosis was so analogous to glanders we also assumed that tuberculosis was chiefly spread by ingestion. It is pleasant to find that direct experiment and pathological research is confirming the correctness of clinical observation.

## A LIGHTNING DIAGNOSIS.

*Subject.* A wire haired fox-terrier, seven years old, rather fat, and with a thick coat. I had treated this animal several times for different ailments, the last of which had been a slight attack of rheumatism.

On the present occasion, the history was that for two or three days past, the dog had been dull, disinclined to move, and rather slow and stiff in his gait when he did move. He had also repeatedly shown pain when touched upon the lumbar region, and for the last twenty-four hours had refused food. The dullness and pain had been increasing steadily since they were first noticed

This history was given to me before I saw the dog, and of course led me to suspect a second attack of rheumatism. When the animal was brought into the room, his gait was so similar to that of subacute lumbar rheumatism, that I diagnosed the case at a glance, without the slightest doubt in my mind.

Fortunately for myself, however, I did not express my opinion at once, but proceeded to make an examination merely for form's sake.

During this, I passed my hand over the loins, evidently causing the dog pain, and as I did so, thought I felt something not quite normal under the coat. I did not yet doubt my diagnosis, but lifted the hairs, and discovered a small scab about the size of a threepenny piece in the lumbar region, the skin around it being reddened and swollen. Pulling off the scab, I found a small jagged wound penetrating completely through the skin, and pressed out about a table spoonfull of thick, dirty white, and rather foul pus, which was collected between the skin and the lumbar muscles.

Of course, I now treated the case surgically, and the animal recovered in a few days. The owners had not been aware that any wound was present, till I accidently discovered it.

*Remarks.* Trivial as this case is, I think it worth noting as illustrating the dangers which attend the practice of making "lightning diagnosis." Only by chance did I avoid treating the case as one of rheumatism, an error which, when discovered, as it certainly very soon would have been, would not have been easy to explain or excuse.

"PRACTITIONER."

## INFECTION IN TUBERCULOSIS.*

By A. E. METTAM, B.Sc., M.R.C.V.S., Principal R.V. Coll., Dublin.

The question of infection in tuberculosis is one of supreme importance not only to the veterinarian but also to the breeder and raiser of stock. The side of the question relating to man we do not purpose treating just now; we desire to direct our observations especially to the means whereby tuberculosis is conveyed to the lower animals and the probable route transversed by the virus when once it has obtained access to the tissues.

Tuberculosis is, as the late Professor Walley described it, a veritable scourge, not only to the bovine race but to all the vertebrate sub-kingdom, for it is now recognised in mammals, birds, reptiles, amphibia, and fishes. In mammals and birds it is exceedingly common, the disease being acquired naturally, among the lower vertebrates infection is in most cases doubtless accidental or designed.

Among domestic animals the sheep and goat though susceptible, and even highly so, are not commonly victims, but bovines suffer heavily; then the pig, horse, dog, and cat. Birds, the common fowl particularly, pay a heavy toll, and semi-wild birds, as pheasants, are also frequently affected. Turkeys also suffer, and seriously, it has been no uncommon thing to receive specimens in the laboratory taken from birds which up to a short time before death had been in the best of health apparently and weighing considerably more than 20lb.

Tuberculosis is due to the ravages in the tissues of the bacillus of tuberculosis. I do not intend to discuss the unity or duality of human and bovine bacilli. I am a firm believer in the doctrine that there is only one tubercle bacillus and that its pathogenic properties are determined by its habitat—by the tissues and fluids in which it has developed. We know full well in other diseases that the virus may be exalted or attenuated by passage through different animals, and that the virus may so lose its potency that it may be safely inoculated into animals susceptible to the action of the unattenuated virus. In a similar fashion I consider the avian tubercle bacillus has become attenuated for the mammal, but we know even in this case that experimentally we may render the avian bacillus pathogenic to mammals.

In the same fashion but to a different degree we may obtain bacilli of human origin which are no longer highly pathogenic to cattle, and doubtless the converse is equally true, but, as the German Commission has shown, there are undoubted cases of infantile tuberculosis of bovine origin; bacilli isolated from such cases being highly pathogenic to cattle. There is no doubt of this at all, and I claim that I am justified in maintaining that bovine tubercle bacilli are pathogenic to man if I can show that tuberculosis in man can be produced by the bovine bacillus. Now every veterinary pathologist knows that bovine tubercle bacilli are pathogenic to all the domestic animals, and it would be passing strange indeed if man alone were exempt from its ravages.

Direct experiment is not possible, but accidents happen and there are undoubted cases on record of skin tuberculosis in man (lupus) due to direct contamination with bovine tuberculous material. Every man does not become tuberculous as to his skin because he handles tuberculous material, even when his epidermis is not intact, but then every man who handles anthrax material does not develope malignant pustule even if his hand is wounded. What I desire to emphasise is this, that because on occasion the disease does not develope it does not follow that the virus is innocuous to that particular animal. Most of us at some time or other are open to tubercular infection but we escape infection by reason of the potent forces at work in our tissues which protect us. Not every person or animal carrying a tuberculous lesion dies or need die from tuberculosis. The very forces which guard us against infection protect us when we become infected. It will be seen therefore that I am not one to subscribe to Koch's doctrine that the bovine bacilli are not pathogenic to man, indeed I maintain that they are, and are capable of producing lesions in man as in other animals.

Infection occurs by ingestion, by inhalation, by inoculation, and in the young animal by the blood stream. In the last case, which we will consider first, infection occurs through the umbilical blood from infection from the tuberculous uterus of the mother. This is the so-called congenital tuberculosis. The fertilised ovum develops along the normal lines and becomes infected during intra-uterine life from the tissues of the mother indirectly. It is extremely doubtful if the fœtus is infected primarily by the sire suffering from a tubercular orchitis: infection may occur secondarily to infection of the uterus by infected semen. It is difficult to believe that the ovum could develope if the tubercle bacilli gained access with the sperm cell at the moment of fertilisation. Infection of the fœtus undoubtedly occurs much later during intra-uterine life and, as I have mentioned, by the blood stream along the umbilical vein. Possibly the commonest route of infection in tuberculosis is by ingestion, and to this portion of our theme I wish to devote some time, and first I desire to direct your attention to the disease in the bird.

*Tuberculosis of the bird* is exceedingly common, and once it has gained access to a poultry run the mortality may reach 100 per cent, all the birds dying sooner or later. Tuberculosis of the bird is an abdominal tuberculosis; the lesions are in the intestine, which is often ulcerated, in the mesenteric glands, there is frequently a tuberculous peritonitis, the intestines being matted together by the products of the peritonitis. The liver is studded with lesions, the spleen is enlarged and contains numerous tuberculous foci. Sometimes, though not commonly, the kidneys and ovary are infected. A very noteworthy fact is the rarity of the lesion in the lung, I have seen it in the turkey.

The distribution of tuberculous lesions in the fowl point out that infection has occurred through the alimentary tract and that the infective agent has been brought in along with the food. The condition of the alimentary tract and the nature of the dejections which are being scattered over the poultry run by diseased fowls accounts for the spread of disease. The food being constantly picked up by the fowls is soiled with droppings swarming with tubercle bacilli. Moreover, there is a tuberculous lesion of the feet of fowls known as "bumble-foot," a lesion marked by an enlargement on the plantar aspect of the foot. This lesion often breaks down and gives exit to myriads of bacilli.

Such a case came into the clinic some little time ago, a smear made from the purulent material oozing from a fissure in the swelling showed tubercle bacilli in inconceivable numbers. I have little doubt in my own mind that this fowl was spreading tubercle bacilli and tubercular disease broadcast among the other fowls of the run.

A further interesting and very probable source of tubercle is the consumption of maggots. Some time ago a tuberculous liver of a fowl came to the laboratory and after diagnosis was put aside upon a tray. It was summer, and soon it became fly-blown and crawling with maggots. I allowed the maggots to develope for a time and then killed and fixed them, passed them through paraffin and cut sections. After staining I had no difficulty in finding large numbers of tubercle bacilli in the maggots. [Since this was written I have allowed maggots taken from a tuberculous lymph gland to develop and have found tubercle bacilli in the flies issuing from the maggots.]

* Read at the meeting of the V.M.A. of Ireland, see p. 187.

In fowls therefore we may claim that tuberculosis arises through the ingestion of food contaminated with the tubercular virus, and that tuberculosis probably never arises through inhalation.

*Tuberculosis in the Dog and Cat.*—Tuberculosis in the domestic carnivora has an important bearing upon the question of tuberculosis in man. My own experience in tuberculosis of dog and cat is that it is of intestinal origin. The cases I have seen in the dog have had marked abdominal lesions, particularly of the liver and kidney. In one case there was a true tuberculous eruption upon the serous membrane, the serous covering of the stomach being very much involved. The liver as a rule contains large caseous masses and I am inclined to think that many cases of tuberculosis are on post-mortem examination at first taken to be growths of a malignant nature.

In a case I had in the cat the predominant symptoms and lesions were located in the chest, the thorax being filled with fluid in which tubercle bacilli were found in enormous abundance. There were cavities in the lung, and the animal had coughed for some time prior to death. The only lesion I could find in the abdominal viscera, with the exception of the kidneys, was a tuberculosis of the mesenteric gland in connection with the cæcum: it had broken down and contained numerous tubercle bacilli I believe this lesion to be older than that of the lungs, and to be the primary centre of infection. The kidneys were cirrhotic.

*Tuberculosis of the Pig.*—In the pig infection occurs probably in all cases through the alimentary tract. The habits of the animal, his omnivorous taste, the custom of giving refuse and offal of all kinds, all conduce to infection of some kind or other. Trichinosis is common in some countries, in others measly pork is readily met with, in all tuberculosis is far from infrequent, and the portal is *via* the alimentary tract.

The disease in this animal is very prone to generalisation, and for this reason lesions of tuberculosis in the pig must be viewed with grave suspicion. Further serious lesions may be found and still the animal be in a good bodily condition and of prime quality. I remember seeing the carcase of a pig in splendid condition to all appearances and yet the centre of the vertabræ contained caseous tuberculous centres. Tuberculosis of the spleen and liver are very common, the condition of the spleen being comparable to that seen in the horse

I have a specimen from the pig into which it would be impossible to place another tubercle the size of a pin's head without touching other tubercular lesions. In the liver the lesions are often numerous and yet discrete, but sometimes we find that the organ is the seat of a miliary tuberculosis, the lesions being microscopic in size. In the lungs the tuberculous centre may be of the chronic nodular type, the lesion a chronic broncho-pneumonia, but very often the lungs are filled with miliary tubercles exceedingly numerous, pale yellow in colour, six weeks to two months old. The pig does not generally live longer than this after the development of the tubercles, and it is often surprising how he could have lived so long with so much pulmonary tissue destroyed.

In the pig the voluntary muscles sometimes show lesions of tuberculosis and especially in the neighbourhood of joints. The muscles have probably been invaded from the joint along the course of the lymphatic vessels, the joint itself being involved in a tubercular arthritis.

That the intestine is the portal for the tuberculous virus is indicated by the almost invariable tuberculous change found in the mesenteric glands and by the not infrequent tuberculous lesions of the mucous membrane. Sometimes the lesion of the membrane is an ulcer, at other times it is a necrosis, the necrosed mucous membrane being raised up above the general level of the membrane and persisting as a more or less irregular elevation composed of friable tissues readily breaking down between the fingers. Below and adjacent to this necrosed tissue the tubercle bacilli may be found in immense numbers.

I wish then to emphasise that in pigs the route of infection is per the alimentary tract, that animals in good condition, even fat, may carry serious lesions of tuberculosis, that there is a great tendency in this animal to generalisation and hence tuberculous lesions in the pig must raise serious doubts in the mind of the inspector as to whether he is justified in passing the carcase of such an animal for human consumption.

In *The Irish Times* for July 30, 1906, I find that "The Markets Committee of the Belfast Corporation have for some time had under consideration the question of the destruction of the carcases of pigs found to be suffering from tuberculosis, and at yesterday's meeting (28 July) it was resolved that in all well-nourished carcases where tuberculosis was confined to the glands of the neck, the head only, or such portion as was affected by the disease should be destroyed, the remainder of the carcase being returned to the owner. In the case of the disease having become generalised, however, the Committee decided that the whole of the carcase should be destroyed." I am not aware that the Belfast Corporation employ a qualified veterinary surgeon as their inspector of meat, and I think it most lamentable that such an instruction should be given to, presumably, a lay inspector, who acting under orders may seize "the head only, or such portion as was affected by the disease" when not only may there have been serious lesions in other parts, as the vertebral column, but even generalisation, though not necessarily evident even to the practised eye. One cannot be too careful in the examination of carcases of swine.

*Tuberculosis of the Horse.*—This also is an abdominal tuberculosis, primarily, and has been ascribed to the giving of cow's milk. The most striking lesions on post-mortem examination are the size of the mesenteric glands, the peritonitis, and the condition of the spleen. The state of the latter organ is as striking as it is characteristic. It is enlarged, and apparently filled with new growths of sizes varying from infinity to a child's head or larger. Frequently the tumours are firm, and greyish white on section, at other times soft, fluid, and containing a material like oatmeal porridge or gruel. The material in the tuberculous lesions are enormously rich in bacilli, in this respect resembling the lesions of the bird. A smear of the pus stained in the usual way may be so rich in masses of bacilli that even after completion of the differentiating process the film is red. Lesions occur in the other abdominal viscera, but they are not so characteristic as those observed in the spleen.

In the lungs the lesions are not always of the same type. Sometimes the lungs appear to contain numerous new formations like to neoplasms—to sarcomata, for which doubtless sometimes they have been taken. At other times the pulmonary lesions are of a diffused broncho pneumonic type with large necrosed areas undergoing caseation, the appearance on section being like to brawn. Again the lesion may be of the miliary type, the lungs being filled with innumerable minute lesions the size of a pin's head. In my experience these three types are the commonest forms of tuberculosis in the lungs of equines.

There is no likelihood of any one form being taken for glanders tubercle, which is practically an abscess surrounded by an intense hæmorrhagic zone. The glanders tubercles are few in number generally, and are irregularly scattered through the lung, and indifferently in both lungs. Nor is there any chance of the lesions of tubercle being mistaken for the worm nodules found in the horse's lung: these are hard, enclosed in a fibrous

capsule, and can be torn from the lung parenchyma only with difficulty.

Tubercular lesions in the bones of the vertebral column are not unknown, and also of the submaxillary, post-pharyngeal, and pre-pectoral lymph glands. I have a record of a case of tuberculosis of the horse which I believe I have mentioned already, but which will certainly bear repetition. The animal was a cart horse, weighed 17 cwt. and apparently, save for a swelling in the inter-maxillary region, in splendid condition. It was at first thought that the animal was developing strangles, but the glands never suppurated. An incision made into the glands was only followed by blood. The animal did not cough save when feeding, the appetite remained good. Portions of the tumefaction in the inter-maxillary region were excised and examined but nothing definite was found. It was believed by the practitioners in attendance that the animal had a new growth, a malignant tumour, and the animal was destroyed. Unfortunately I did not have the opportunity of a post-mortem examination, and I could not ascertain the condition of the contents of the abdomen. The submaxillary, post-pharyngeal, pre-pectoral lymphatic glands, and portions of the lungs were sent to me. The lesions in the lungs were discrete, tumour-like formations and contained myriads of tubercle bacilli. Tubercle bacilli were found in all the glands examined. Unfortunately the post-mortem record is incomplete and we know nothing of the condition of the viscera behind the diaphragm, but the lesions noted are precisely those of a tubercular infection occurring through the mouth in the neighbourhood of the head and traversing the lymph tract to the thorax. The animal was only four years old and never lost condition.

On the other hand loss of condition may be very pronounced. The course of the disease is slow, insidious, and often puzzling. If there are no well marked symptoms but constant and progressive loss of condition I. would advise the use of tuberculin as a diagnostic agent

It is often extremely difficult to trace the source of infection, but I think in view of all the work done recently in tuberculosis we are justified in affirming our long maintained conviction that infection has occurred by the alimentary route. Practitioners would do well when recommending the use of milk as a sick diet to insist that the milk be boiled, or at least pasteurised, and if cow's milk be given to young equines, as it often is, to insist that it be given only after sterilisation.

*Tuberculosis in the Bovine.*—Of all the domestic animals the bovine is most commonly affected with tuberculosis particularly aged dairy cows. In young animals running out in a state of nature infection is rare, or at least the lesions are minute, and may be "closed.' "Closed" lesions are those which have undergone degenerative changes: they are no longer dangerous to other animals and may be healed and not likely to extend. Sometimes these "closed" lesions may contain virulent material, as found on inoculation, and occasionally they may break down and be the source of a secondary infection. It is the "open" lesion discharging virulent material which is such a frequent cause of the spread of the disease not only in the individual but also to others. If the lesion is in the lung then the virus is spread, it is said, by the fine droplets of moisture forcibly ejected from the bronchi during paroxysms of coughing into the air which is breathed by animals confined in the same house. Or again, and this in my opinion is more common in the ox, the virulent material coughed up to the pharynx is swallowed and passing along the alimentary tract produces secondary infection and a new crop of lesions.

It is very commonly noticed on examination of tuberculous lungs that there are lesions of different ages, some old, others more recent: the recent follow a secondary infection from an old lesion. In some cases undoubtedly the recent lesions are produced by inhalation of the virus into the deeper parts of the lung supplied by the bronchus into which the broken down lesion is discharging. Or it may be by extension along the lymphatics, and possibly by ulceration, into the blood stream. In the latter case, however, the secondary lesions are more likely to be generalised, because it is probable that the pulmonary vein will be involved rather than the pulmonary artery.

In secondary lesions in the lungs from discharge of virus into the bronchi the resulting changes will be those of a tuberculous broncho-pneumonia with consolidation of the pulmonary tissue. It is easy to believe that such extension does occur, and there is no reason to doubt but that it is by no means uncommon. In my opinion, however, the most important secondary lesion is the one following invasion of the virus at a distance, or at a distant point, and the conveyance of the virus from the point of entry to the lung. The importance of this cannot be exaggerated in view of recent experiments of tubercular infection not only in laboratory animals, but also in both cattle and goats.

It will be remembered that Von Behring put forward the opinion that tubercular infection occurred in early life, at the time of the milk diet, and he explained the frequency of tuberculosis of intestine and mesenteric glands by the hypothesis that the intestinal lining was not completed until some time after birth. In other words the intestine was vulnerable, much more so than during later life. It has been shown, however, that the intestine is vulnerable in later life, and that tuberculosis of the lungs will supervene upon feeding with tuberculous material, and this in adults even when the infectious material is in small amount. It was considered that the pulmonary lesions arose from the breaking down of old centres produced by early intestinal infection, and that infection from the intestine did not occur because experimentally the lesions in the mesenteric glands were trifling or apparently wanting. Now, however, it has been shown by Calmette and Guérin that the lymphatic glands of adults are only imperfect filters, and that bacilli may easily pass through glands where they would be arrested in the young. Hence infection might readily occur through the intestine leaving no trace either in mucous membrane or in mesenteric glands. The same may be said for glanders in the horse.

Calmette and Guérin's experiments were made upon young goats sucking udders of dams that had had an experimental tuberculous mastitis induced. Bacilli of different origins were employed—bovine, human, and avian. Positive results were obtained in those cases of mastitis set up by the human and bovine bacilli, the lungs of the sucklings contained numerous tuberculous centres.

The experimenters also used adult cows. The animals were recognised as free from tuberculosis by the use of tuberculin, and were then given by aid of the stomach pump quantities of virulent cultures of tubercle bacilli, ·10gr. to ·25gr., ·50gr. and 1gr. The pump was used to ensure passage of the virus beyond the rumen and to prevent any infection of the upper part of the alimentary tract. Thirty days afterwards all reacted violently to tuberculin. There is no need to give all the results of the post-mortems and control experiments, and I will content myself by giving the conclusions drawn from the results by the experimenters:

"That animals contract tuberculosis easily by the intestinal tract, not only when young but also in adult age, and without showing any visible lesions in the walls of the alimentary tract.

"That in young animals the bacilli are generally kept back by the mesenteric glands. Either infection remains localised here for a greater or less length of time and ends by healing, or caseous tubercles develop and extend along the course of the lymph stream.

"That in adult animals the lymphatic glands not

offering so determined a barrier the bacilli are more generally found in leucocytes in the lymph stream and thence in the pulmonary artery passing to the lung.

"That so-called *primary* tuberculosis of the lung is most often of *intestinal origin*.

"That of all methods of infection that by the intestinal tract is most constant and accords best with the usual conditions of natural infection."—*Annales de l'Inst. Past.*, May, 1906.

Calmette and Guérin from their investigations make an important recommendation which cannot be too widely made known, and that is that consumptives should be taught to expectorate and not to swallow the products from their lungs.

Vallée caused very young calves free from tubercle at the beginning of his experiments to suck the udder of a cow affected with tubercular mastitis. The calves sucked twice and each time took about 150 c.c. of milk (about five fluid ounces). Afterwards the calves fed upon their mothers' free from tubercle, or took boiled milk. Thirty-five days after the commencement of the experiment they reacted markedly to tuberculin. All when slaughtered were found to have tuberculosis of the bronchial and mediastinal glands. The lungs were free from tubercle, but there were newly erupted lesions upon the anterior surface of the diaphragm indicating that the virus had traversed the lymphatics of the diaphragm from peritoneum to thorax and thence infected the bronchial and mediastinal glands.

I myself have seen tuberculosis of the bronchial glands without discoverable pulmonary lesion, and I would ask the profession to pay particular attention to the bronchial and mediastinal glands in all young cattle which come to post-mortem examination. (Probably those cases of reaction following the use of tuberculin with no discoverable lesion at post-mortem examination may be explained by the fact that the lymphatic glands may contain bacilli even without histological lesions. In some cases inoculation is necessary to reveal their presence.)

In order further to prove the route of the infection Vallée performed a laparatomy and inoculated with all precautions tubercle bacilli directly into a mesenteric gland. The animal was killed 49 days later. The gland was enormously increased in size. The neighbouring glands, the sublumbar glands, liver and lungs were free from tuberculosis. The bronchial glands were three times the normal volume and contained tubercle bacilli. He concludes from his researches that of all methods of infection that of ingestion is most rapidly followed by lesions in the glands connected with the lungs, and that the bacilli may penetrate through the intestine without leaving any trace in either mucous membrane or mesenteric lymphatic glands, to collect and proliferate in the bronchial glands.

It will thus be seen that infection by the alimentary tract in tuberculosis is not difficult and that lesions may be set up in lungs and in bronchial and mediastinal glands. It appears, however, that tuberculosis of the lungs is not so readily induced by inhalation experiments as is generally believed. Intratracheal injections are not more certain, for save for local lesions where the needle penetrated, the respiratory passages remained free from injection. Roux and Vallée, using a special contrivance, sprayed the naso-pharynx of twelve calves, giving each several milligrammes of virulent tubercle bacilli. Of these only four showed signs of tubercular infection; three had had two spraying, the remaining one only one. Two of the three and the fourth rapidly showed clinical evidence of tuberculosis. Calf 1 had caseation of the retro-pharyngeal lymphatic glands; all the viscera, bronchial and medinstinal glands are free from infection. No. 2 calf had tuberculosis of the retro-pharyngeal, cervical and tracheal glands, no lesions elsewhere. No. 3 had also infection of the retropharyngeal lymphatic glands which were enormous, all other viscera were free. No. 4 had tuberculosis of the retropharyngeal and tracheal glands, no other lesions.

It appears, therefore, that infection of the lungs through the respiratory passages is not common, and that at most animals receiving a dose of virus out of all proportion to that offered under natural conditions, show infection in the upper parts of the tract.

In practice there does not appear to be much doubt that infection of the retropharyngeal lymphatic glands occurs as the result of direct inoculation from coughed up tuberculous material which is swallowed. That tubercle bacilli do lie in the pharyngeal mucus of consumptive cows I have satisfied myself, and tuberculous pharyngeal lymphadenitis is frequently associated with pulmonary tuberculosis. It is possible that exceptionally a tuberculosis may commence in the lymphatic glands about the head and extend from the primary site along the lymphatic vessels to the chest.

In chronic tuberculosis, as in chronic nodular tuberculous broncho-pneumonia, the necrotic process may involve a blood vessel, and the walls becoming ulcerated give way and allow the contents of the nodule to enter the blood stream. This probably is the commonest way generalised tuberculosis comes about, the virus being conveyed by the blood stream and disseminated over the whole body. Now it is a matter of some interest to know how soon miliary tubercles may become manifest in, say, the lung after entrance of tubercle bacilli into the blood stream. I am able to say that miliary tubercles are in evidence on the third day in rabbits, as Borrel showed, and further that tubercle bacilli may be found in the bronchial lymphatic glands at the same time. Further, and also in the rabbit, I have found tubercle bacilli in the spleen on the fourteenth day following injection of a culture into the auricular vein. (Lesions may also be found in the kidney at this early date.) In other words, bacilli may have passed through the pulmonary filter into the bronchial lymphatic glands in three days, and from these glands into the blood stream to infect other organs and the body generally in fourteen days. Of course it is possible that some few bacilli may have passed right through the pulmonary circulation without being arrested there and have entered other organs, but I think it more likely that there has been a fresh eruption into the blood stream from either lungs or through the lymph stream from the bronchial glands.

There is no doubt then that tuberculosis follows the ingestion of virulent tuberculous products both in the young and in the adult, and we may take it as proved that pulmonary tuberculosis supervenes upon infection by the alimentary tract. This being so, then the question of prevention resolves itself into careful supervision of the food supply.

Other forms of tuberculosis, such as lupus or tuberculosis of the skin, tuberculosis of the lymphatics of the skin as seen in cattle, and doubtless some cases of tuberculosis of the udder are due to direct inoculation of the virus, the disease being primarily a local one. Possibly most cases of udder tuberculosis have a different origin, but these just now do not interest us.

From what has been said it will be understood that tuberculosis is a disease of intestinal origin, that even cases of pulmonary tuberculosis can be traced to this source, that possibly too much attention has been paid to the opinion that it is primarily through the respiratory tract that infection occurs. The history of tuberculosis is coming nearer and nearer that of glanders. It was believed that glanders was spread by inhalation of the virus; recent investigations however have shown that the alimentary route is the most common and the most likely. Indeed we may take the recent history of the work on glanders as emphasising the opinions now to the fore front as to the most probable route of

infection in tuberculosis. Knowing the most common route of infection, cannot we now check the ravages of this white plague?

Treatment of tuberculosis, save in the early stages, is far from satisfactory. In later stages we all know that the damage done is far too serious for remedial measures; we can only hope to benefit our patient in early stages when there is a chance of assisting in the production of fibrous changes in the lesion.

In conclusion a few words may be said upon the question of prevention. Prevention may be accomplished along two lines (1) keeping the animal beyond the possibility of infection, and (2) rendering the animal immune to infection. The well known advice of Bang carried out in its entirety would accomplish the former; recent researches indicate how the latter may succeed. It has been shown that if young animals free from tuberculosis receive by the alimentary tract tubercle bacilli of low potency, after a time they become capable of withstanding doses of infective material that surely kill control animals. Now this is merely a phase of the Pasteurian method of immunisation, and has the disadvantage of being possibly dangerous for some animals. The use of living bacteria is a drawback inasmuch as disease may be produced which we desire to check. However, still more recently it has been shown that dead tubercle bacilli have also the power of producing an immunity which apparently is as satisfactory as that set up by living bacilli, and without the drawbacks of the latter. More work upon the whole question is desirable, but the results are promising and the recent publications of Calmette and Guérin, of Roux and Vallée hold out the hope that the question of immunisation in tuberculosis is nearing solution. These researches follow upon those of Von Behring, who observed that attenuated cultures of tubercle bacilli were capable of giving immunity to virulent cultures, and I believe I am correct in saying that priority may be claimed for Sir John M'Fadyean who suggested the use of the avian bacillus to give immunity to bovines against the disease set up by the specific bovine bacillus. But we have no intention of discussing the claims of priority, it is a cause for congratulation that recent work indicates that we are within measurable distance of being able to confer immunity to this dread disease.

## A Disease of the Horse Simulating Farcy, from which an Organism Possessing many Features in Common with Bacillus Mallei was Isolated.*

By Capt. F. S. H. Baldrey, I.C.V.D., Punjab Veterinary College, Lahore; and G. H. Martin, I.C.V.D. Imperial Bacteriological Laboratory, Mukhtesar.

In January last a horse was sent to me as suspicious of Farcy. On examination both hind legs were found to be slightly swollen from the thigh downwards, the swelling being firm and resistant but not painful. The horse was very weak and emaciated; temperature 102° F., respiration normal but shallow. The history was that the animal had been ill for about two months, but that the swellings were recent.

The lymphatics of the affected limb were very slightly "corded" and at irregular intervals there were small buds numbering four on one leg and two on the other; with the exception of one on the inside of the thigh they were outside the leg. Microscopical examination of pus failed to reveal either epizootic lymphangitis or ulcerative lymphangitis. The horse was cast, the nodules opened aseptically and cultures of the contained pus made on potato. The growth was of a creamy consistence, yellowish-white in colour and small in quantity.

Two guinea-pigs were inoculated intraperitoneally with the pus, and two sterile pipettes of pus taken.

The horse was tested with mallein that same evening. There was no rise of temperature and the local reaction was very slight. The horse died two days after. The post-mortem revealed—no ulceration of the Schneiderian membrane, no enlargement of the submaxillary lymphatic glands. No lesions in the lung. There were multiple abscesses throughout the lymphatics of the hind legs, and the inguinal and precural lymphatic glands. As the symptoms, cultural and inoculation tests, were not specific of glanders, the case was returned as *Pyæmia*.

Smears made from the pus were stained with Carbol Thionin and revealed a few organisms very much resembling *Bacillus mallei* in size and shape but somewhat shorter and more rounded. They stained weakly and showed spaces more faintly stained. The cultures upon potato after five days showed a pure culture of the above organism. The appearance was pale brown, glairy and honey-like; after ten days' growth it became a little darker, but not chocolate in hue, smears from this culture stained with Carbol Thionin showed the same organism with an entire absence of thread forms. After twenty days' growth the culture became pale in colour and remained so.

Subcultures from the potato were made in bouillon, and guinea-pigs inoculated intraperitoneally. From the first culture the organism was virulent and killed a guinea-pig in thirty-six days with enlarged and ulcerated scrotum from which the same organism was isolated.

The two guinea-pigs inoculated with fresh pus showed no symptoms until the 28th and 29th day respectively, when febrile symptoms appeared and the scrotum began to enlarge. They died on the 37th and 41st day respectively, with slightly enlarged and ulcerated scrotum. Aseptic precautions being taken cultures upon potato were made from each, the same organism was found in pure culture. This organism was again cultivated in bouillon and inoculations made in a pony, in cattle, buffaloes, sheep, and guinea-pigs, but the results were not very marked. The pony had slight fever and a small local lesion which disappeared in seven days. No symptoms have appeared since and the other animals developed nothing. This may be accounted for by the fact that the hot weather had set in, the room temperature in the laboratory was 100° F. and the incubator ran up to 43° C. Under the circumstances it is not surprising that the culture was attenuated although the organisms showed distinct virulence before this. The organism retained its original morphology all through. The brown colouration in the growth is slow, not appearing until the fifth day, is honey-like. and light brown at first, becoming slightly darker; after some fifteen days it begins to lose its colour and becomes pale brown, and remains so. It never grows thread forms, is negative to Gram and Claudius; stains feebly with Meth. blue, but better with Carbol Thionin.

The organism measures 2·5-3$\mu$ in length and ·3-·5$\mu$ in width. Its growth on Bouillon Agar is pearly white and diffused, growing in an irregular stellate form on an Agar slant. Not having the means, I was unable to test by growth on any other media.

Its effect on guinea-pigs is very slow, there being none until the 27-28th day or even later, death occuring in from 8-12 days after the first symptoms, with enlarged and ulcerated scrotum.

I have ventured to suggest that this is a pseudo-glanders on account of the similitude to Farcy in the clinical symptoms in horses, the growth on potato, the effect on

* Reprinted from *The Journal of Tropical Veterinary Science*, Vol. I, Part III.

guinea-pigs, the morphology and staining characteristics. Although it does not appear to be of so virulent a type; my cultures having completely lost their pathogenicity in guinea-pigs.

I sent to Mr. Martin at the Mukhtesar Bacteriological Laboratory the pipettes containing pus, and his results are very similar to mine. His incomplete description of its bacteriological and morphological characteristics are as follows:—

Cultures at 20°C. for 48 hours show a slight greyish white growth along the streak on agar (glycerine).

No growth on blood serum.

Slight cloudiness and very slight whitish sediment in bouillon. No change in litmus milk. No indol formation in peptone water and no fermentation in sugar media.

On potato a slight yellowish white shining growth with definite and wavy edge, becoming brownish the next day.

Culture at 37°C. for 24 hours on glycerine agar shows a greyish white fairly plentiful and slightly raised shining growth.

On blood serum—*Nil.*

In bouillon. No smell, upper portion clear, a slight flocculent sediment which adheres somewhat weakly to the bottom of the tube, breaking off with slight difficulty.

Litmus milk—unchanged.

No indol formation and no fermentation of sugar media. Potato shows slight yellowish white transparent looking shining growth and fairly defined edge.

The 20°C. cultures on 3rd day (56 hours) show only increased growth.

The 37°C. cultures show increased growth and that there is slight acidity of litmus milk but no clotting. No fermentation of sugar.

Potato growth is now a light brown. This growth gets darker though not of the chocolate hue seen in glanders. No thread forms appeared in older cultures. The growth on agar differs from B. Mallei in being much more exuberant.

Morphologically the organism is shorter and thicker than that of glanders. It is gram negative and with simple stains shows clear spaces. With Carbol Fuchsin and careful decolourising many of the organisms show metachromatic bodies well. There are no clubbed enlargements and no thread forms.

Inoculation in guinea-pigs produced a slight enlargement of the testicles with fever and general malaise which lasted four or five days, but the lesions were not fatal and the animals recovered. The period of incubation was four days.

## VETERINARY MEDICAL ASSOCIATION OF IRELAND.

A meeting took place at the Royal Veterinary College of Ireland, Pembroke Road, Dublin, on Tuesday, August 28, at 8 o'clock p.m. The following members were present: The President (Mr. J. McKenny) in the chair; Messrs. M. Hedley, Treas.; C. Allen, Hon. Sec.; J. B. Dunlop, Prof. A. E. Mettam, W. Pallin, Capt. W. A. Pallin, A.V.C.; J. Preston, Mallow; P. D. Reavy, Bundoran; J. F. Healy, Midleton; J. J. Vahey, Sligo; R. P. J. Mahony, Maryborough; L. P. Power, Cashel; J. Holland, Athy; D. Hamilton, Ballina; J. J. Ross, Belfast; W. A. Byrne, Roscommon; M. J. Cleary, Mullingar; P. J. Howard, Ennis; Prof. J. F. Craig, Col. J. Reilly, A.V.C.; Col. E. H. Hazelton, A.V.C.; R. W. Flannery; L. M. Magee, Bray; F. A. Heney, J. J. Fleury, Prof. G. H. Wooldridge, E. C. Winter, Limerick; and Prof. A. C. Duncan, Royal Agricultural College, Cirencester.

The following visitors were also present: Messrs. R. C. Irving, London; R. Kernohan and J. Kernohan, Ballymena; E. A. Ryan, Strokestown; A. Watson, Dublin; M. P. Walsh, E. P. Hearne, W. Kehoe, J. M. Winckworth, J. A. Hewson, Killarney; and C. F. Parsons, Cheltenham.

The following apologised for non-attendance: Messrs. H A. Stewart, E. Wallis Hoare, T. J. Flynn, J. F. Mahony, J. J. Kelly, J. K. Thomson, Capt. R. H. Holmes, A.V.C.; J. P. Small, Finlay Kerr, T. McGuinness, and T. D. Lambert.

Messrs. J. J. KELLY, Kilrush; E. J. CARROLL, Ennis; J. BARRY, J.P., Kilkenny; Col. E. H. HAZELTON, A.V.C.; and T. F. RENEHAN, Johnstown, Kilkenny, were balloted for and duly elected members of the Association.

Mr. J. A. HEWSON, Killarney, was nominated for election.

On the President proceeding to sign the minutes of the May meeting:

Mr. MASON wished to call attention to the fact that Mr. Hedley's observations were not fully quoted, and as on a previous occasion he (Mr. Mason) would not be allowed to amend a speech of his, he thought the other members should receive the same treatment as he got. A remark he had made in the heat of the moment had made an enemy for him who had been a persistent enemy ever since. He thought what was "sauce for the goose, was sauce for the gander." (Hear, hear.)

The PRESIDENT explained that on every occasion when their proceedings were reported, a copy of each member's remarks was sent out for revision, and according to Mr. Mason's proverb Mr. Hedley was at perfect liberty to make any alteration he pleased. He thought Mr. Mason was referring to some written observations rather than to a speech.

Mr. MASON said the expression he referred to was "unmitigated cad": he wished to correct that, but was not permitted to do so; the President would not allow it.

The PRESIDENT said it was the Secretary's duty to look after these matters. He, as President, would know nothing about it.

Mr. MASON was satisfied with having called attention to what he considered an inequality of treatment, and would withdraw his opposition.

Mr. HEDLEY referred to Mr. Mason's complaint as conveying a very ambiguous charge. Let Mr. Mason state distinctly what was omitted. He was not afraid of anything he said.

Mr. MASON said it was in connection with some comparison between the North and the South of Ireland. He did not remember exactly the words, but he believed the report did not contain all he said.

Mr. HEDLEY insisted that full particulars should be given, or the matter should be allowed to drop, as it could not be dealt with. He then proposed, and Mr. Magee seconded, that Prof. Mettam's paper should be read at that stage of the proceedings, and the report of Council be postponed until later. Prof. Mettam had prepared a very great deal of valuable matter, and it would be a pity to lose any of it.

[The paper appears at p. 182].

Prof. METTAM exhibited a great number of lantern slides, showing the bacillus tuberculosis and various phases of the disease and its lesions in domestic and other animals, cultures, etc.—several of the slides having only been prepared a few hours before from photos taken at the College.

### DISCUSSION.

The PRESIDENT complimented the essayist on his able and interesting contribution, both from a practical

and scientific point of view, and invited members to discuss it.

Prof. WOOLDRIDGE thanked Prof. Mettam for his excellent paper, and for the very lucid manner in which its details had been illustrated and explained. He would be rather diffident in criticising it, as he was afraid it went rather beyond some of them at any rate, and included a summary of the most recent researches on the subject. It was of special interest to him personally as he had had a great deal to do in connection with some of the cases referred to. As regarded the case of the dog mentioned, he thought tuberculosis in the dog and cat was very much more common than was generally supposed, but the same train of symptoms was not always described. In this particular case ascites was very pronounced, and he was under the impression that there was a large quantity of fluid in the abdominal cavity, but probably due to new growths and to an enlarged liver the result of the new growths. However, in puncturing they found a lot of liquid present. Then a suggestion was made as to the operation practised in the case of human beings where ascites was present due to cirrhosis of the liver, viz., to produce anastomosis of liver and diaphragm. They commenced that operation as the dog was very bad—indeed they were under the impression that if it was cirrhosis, the operation might do good, and if it were tuberculosis, or if it were a case of neoplasms, they would finish off the dog by chloroforming. The liver was found to be studded with tubercles—they had chloroformed the dog and done away with him.

With regard to infection in cattle, he thought the most startling information given them that evening was that infection in cattle was *chiefly* by way of the mouth. It had been known—as Prof. Mettam had reminded them—that in glanders they might get pulmonary lesions by the introduction of glanders by the mouth; Prof. M'Fadyean had demonstrated that last year. The same occurred in tuberculosis, and Prof. Mettam had stated that the organisms gained access to the lung by the mouth, and primary thoracic lesions were set up without any lesions in the alimentary tract. With regard also to the alimentary tract being secondarily affected to thoracic affection, he held that view very strongly indeed. Lesions in the lung become broken down, bacilli are coughed up into the pharynx and swallowed, and then set up intestinal tuberculosis and tabes mesenterica. This he had constantly put before his classes. Phthisis was a common form of tuberculosis, and that was a strong argument in favour of infection by inhalation. If it were true that pulmonary tuberculosis occurred as the result of ingestion, then they should reduce as far as possible the chances of the organisms gaining access to the system by the alimentary tract. Phthisis was said to be induced only by inhalation of dried sputum. They well knew that most of those pathogenic organisms lose their virulence when dried. The frequency of primary tuberculosis in humans was often quoted to discount the probability of cow's milk being of importance in the causation of human tuberculosis, but if what Prof. Mettam had told them was correct, then that argument fell through. In that case, they would do well not to lose one inch of the ground they had gained in the campaign against the dangers of tuberculous milk, which was one of the most serious sources of the infection of tuberculosis in man. (Applause).

Mr. PALLIN said everyone was delighted with Prof. Mettam's paper, and his splendid lantern demonstration. It was evidently an urgent necessity that very careful examination should be made of the food they ate, and they should take heed of the many warnings given them. There should be no reproduction of the tuberculosis germ, except for experimental purposes. As regards the question of foals referred to—he was at the present time engaged in preparing a treatise on the rearing and treatment of foals, and he was very much inclined to think from his experience that a great many cases of sudden deaths among foals were due to "joint-ill," which was a very fatal disease. Some ascribed them to a tuberculous condition of the mother, and he thought the references which Prof. Mettam had so ably made on this point tended to sustain that view. Mares were very often suffering from incipient tuberculosis which was not absolutely developed, and caused the death of the foals by infection through the uterus becoming poisoned with tuberculous material. The result is that cases appear in foals which go by the name of "joint-ill"—sometimes accompanied by enlargement of the joints, sometimes the navel becomes diseased and the result is death.

He had made careful post-mortem examinations in one or two cases—one during last foaling season—and he could not satisfactorily account for the deaths. The last was a decided case of "navel-ill." The navel was opened, and the whole mesentery was found studded with a most decided tuberculous deposit, as well as some of the lining of the intestines. He was sorry he had not had an opportunity of examining the lesions under a microscope. He might mention a very peculiar case, dating about two years before, of a foal that had lost its mother and was put on cows' milk. It did very well for about three months, when suddenly it withered and seemed as if it had got a stroke. It still continued to take the milk, but soon died. It proved to be the very worst case of acute phthisis he had ever seen. The cow turned out afterwards on testing to be a real bad case of tuberculosis herself, showing that in this case it had directly conveyed the infection to the foal.

He did not think that horses were as much subject to tuberculosis as cattle and pigs. However, a large number of highly-bred horses turned out to be no good—certain racehorses were regular "frauds" and consequently useless. It might be found that many of them were really suffering from tuberculosis. But it was really the foal question he was most interested in and anxious about; he intended to go more fully into that Prof. Mettam had referred to, and he thought further research into that particular branch of the question would be very interesting—particularly as to the connection that existed between "navel-ill" and a tuberculous condition of the dam. (Applause).

Mr. BYRNE was relieved to learn from what Mr. Pallin had stated that tuberculosis prevailed to such an undreamt of extent amongst thoroughbred horses. The fact that it had existed so long and to such an extent was not creditable to the profession, but now they, and all who were interested in racing knew exactly where they were. The racing man had hitherto been looked upon with distrust by the unco guid, owners and trainers were ranked with the lost and fallen. Why? Because of the prevalence of tuberculosis amongst racehorses!!! He thought he had heard it stated on occasions that horses were pulled when they didn't all win, they were being readied, they were merely out for their health, they weren't spinning, it wasn't their day. He had heard that jockeys were hopeless fools or cunning rogues, and indeed the suspicion existed in many minds that that noble institution, the turf, which existed solely for the improvement of the breed of horses was an ignoble instrument for gambling and greed. He was proud to learn from Mr. Pallin that this was all a mistake; they could all go racing now with a light heart and an easy conscience, and put all the blame for whatever happened on their old friend the bacillus tuberculosis. (Laughter). Seriously he must say, with twenty years experience of hunters and racehorses, that tuberculosis was very rare amongst them; he had only seen one undoubted case amongst horses. He strongly dissented from the view expressed by Prof. Mettam and

Mr. Pallin that the danger of transmitting tuberculosis to young foals fed on cows' milk was so great that in such cases the milk should be sterilised. It was an instance of science gone mad. Such suggestions were ridiculous and impracticable, and would not be made by practical men.

He was pleased to have an opportunity of thanking Prof. Mettam for the excellent *resumé* of the latest work on this interesting subject which he had prepared for their meeting. It must have entailed a very great deal of reading and research. But the paper confirmed him in the belief he had long held that this minute, detailed bacteriological work was for the specialist in his laboratory, and was, except as to its broad principles and in its bearing upon practice, beyond the reach of the busy practitioner. He had lately attended the post-graduate course in London, and though he had tried hard since his return to practice, he found himself unable to keep abreast of the knowledge that was being lovingly acquired in countless laboratories all over the world by men who lived with their microscopes.

He looked forward with the greatest interest to the publication of the treatise which Mr. Pallin had promised them, and in which he hoped he would develop his new and epoch making theories as to tuberculosis. (Applause).

Mr. WINTER had nothing very useful to contribute to the discussion, but would like to add his quota of thanks to the essayist. The subject treated of was one of vital importance, and those who did not compile such papers had little idea of the amount of hard work they entailed. He, however, knew that on Prof. Mettam's part it was a labour of love. He agreed with his theory that 90 per cent. of the cases of tuberculosis are contracted by ingestion in their patients. Observations he had been making for some time past showed that most cases arose in the mesenteric or abdominal glands ; the bacilli are thus carried in the blood stream through the lungs, and some of them get retained there and set up centres of infection. One source of the infection of tuberculosis was brought vividly before him in the case of lands on which rabbits and other ground game abounded, and he did not know how the question of the eradication of the disease could be successfully attacked under such circumstances. Very many rabbits and hares died of tuberculosis, and cattle grazing on the land became infected, and he scarcely thought they would stamp out the disease, or swine fever either, until they first got rid of the ground game. He did not think himself that the inhalation of dried sputum was a very great factor in the propagation of the disease, as the bacilli become desiccated and probably destroyed in 99 cases out of 100. He had seen a great many cases of old dairy cows becoming affected with tuberculosis and showing nodules on the legs—principally the fore legs—and coming up in the train on Monday he saw a cow with an enormous pair of knees, and nodules apparently on the shoulders and neck, he should try and get hold of a photograph of her. He would not detain them any longer. He believed himself that tuberculosis in an animal was transmissible to any other animal, and he believed the bacillus was the same in all cases. He would like to add that he had a number of racehorses that must have been badly affected with tuberculosis ; he would have liked to have made post-mortem examinations on some of them long before he got rid of them.

Mr. HEDLEY had expected a paper that evening, but it would be better described as a lecture, and a lecture illustrated by a number of as splendid lantern slides as he had ever seen exhibited at a meeting of that character. (Hear, hear). He happened to know something about photography, and about the making of lantern slides, and was well acquainted with the attendant difficulties. He accordingly was able to appreciate the enormous amount of care that had been expended in producing the lantern effects they had the pleasure of witnessing that evening, and if it were for nothing else they owed the essayist a debt of gratitude, not forgetting his capable lanternist. (Hear, hear). It was one thing to get up beside a lantern ; it was another thing to successfully present your slides.

He would not like to occupy their time much on that occasion, simply because the paper was so full of matter for discussion that it would be impossible to adequately deal with it from memory. There were some questions that should really be carefully thought out—he did not mean from Prof. Mettam's standpoint alone, but from that of the ordinary practitioner, such as his friend Mr. Byrne had been referring to, who resides in country practice ; also from the view of the medical practitioner who had to do with sanitary arrangements ; he was sure they would understand what he meant. Prof. Mettam had shown how easily he fed maggots and afterwards found the tubercle bacillus within their bodies. They were aware that the excreta of a human being suffering from tuberculosis must be charged with the tubercle bacillus. They were also aware that in very many country districts such excreta is ejected not into the water closet as in the city, not into the ordinary earth closet, but very often into the common fields, and there it remains to be a resting place for the very maggots that Prof. Mettam spoke about, where they live and thrive, grow fat, and are fed upon by various creatures upon which we have partly to depend for our own food, such as farm yard fowls which will just as readily feed on maggots infected with the bacillus tuberculosis as those which are not.

Reference had also been made to the ill that might be derived from the drinking of contaminated milk in country districts and in towns. He was sure his friend Mr. Watson, who was there as a visitor that evening, held strong views as to what was required in country dairies supplying milk to the towns. Prof. Mettam had shown them that the drinking of milk from an infected udder might set up tuberculosis in from 3 to 14 days, and there was not the least doubt that cases had arisen from this cause ; it was knowledge not theory, and it behoved those hygienic authorities, who had the power to deal with the matter, to take immediate action to check the source of infection, and those who had not the power should seek to obtain it. He had not quite followed Prof. Mettam's statements with reference to infected semen, and he was not clear as to whether he was theorising or not as to the existence of tubercles in the seminal fluid. Of course if the bacillus were in the testicle, it would be easy to understand it as finding its way into the fluid. He would like to hear more about this point. Among the other matters Prof. Mettam had referred to there was one which struck him very forcibly, namely, that dead tubercle bacilli will, under certain conditions, give immunity. That was an advance, a great advance, and one that they would no doubt hear more about.

Then as to the question of eradicating contagious diseases of animals, especially those that are a danger to human life, of course every possible step should be taken ; the object of all treatment was to secure for mankind a lengthened life. Some one had got up that evening and distinctly stated that he did not foresee any means of getting rid of tuberculosis. Well, they would not get rid of it all at once, but every step was a gain. Prof. Bang had shown them one direction in which infection could be guarded against by setting aside a newly-born calf the progeny of a badly affected bull, and giving it milk prepared under certain conditions. Medical men had shown how by the expenditure of a little money, dangers of infection could be reduced. Every step counts, and every step brought them nearer to the top of the ladder all were endeavouring to climb, the ladder that led to long life and happiness. (App.)

There was just another thing he would like to mention —it was also referred to by Mr. Winter. Some years before he made a statement that a large number of rabbits died of tuberculosis. Well, he had examined several that died and found he was entirely wrong; and about the same time he received a letter from a correspondent who wrote that he had been studying tuberculosis for a considerable period, and had never heard of young wild ground game being affected with that disease, except pheasants. He had never known any case amongst wild fur animals. The disease was psorospermosis.

The PRESIDENT thought that as it was getting late he would have to terminate the discussion. A few moments previously he had considered it might be advisable to postpone the discussion on Prof. Mettam's very able paper, but on reflection considered it would be comparatively useless to do so as the vast amount of matter contained in the paper could not be discussed *in globo* at any ordinary meeting; indeed, any one point of the large selection set forth in the paper might be discussed for not only hours, but for days, weeks, months, and even years, and then not be finally settled. The fact was that the Commission, which had the subject under consideration for a very considerable time, might be said not to have advanced very much in the way of arriving at any satisfactory conclusion. Indeed, bacteriological deductions although usually received by the scientist as clear and definite, were most evasive to the practitioner's way of thinking, as they were based upon what appeared at the time to the mind of the former to be facts, but were mere bubbles to those who only admitted a fact when it was proved to be one; and it should be admitted by all that mere scientific deductions were changeable factors. For instance, the statements of a bacteriologist were garnished with such phrases as "from our present knowledge," or "under certain circumstances," or, "it appears to us that so-and-so is the case," or "bacteria at critical stages of their existence, or under this or that circumstance, are not only difficult to recognise, but often impossible to distinguish from other bacteria," and after enumerating many such shifty statements arrive at conclusions which are opposed to every-day experiences. Very noticeable to his mind was the now well-established theory that tuberculosis was not hereditary. It was said that the offspring of tuberculous parents were merely predisposed to the disease, and were frequently contaminated at the time of birth by the mother, or contracted the disease by coming into contact with tuberculous persons. Now, Professor Mettam told them that the testicle of the male and the ovary of the female were sometimes found to contain tubercle bacilli; if this could be practically demonstrated by the microscope, it seemed very possible to him (the speaker) that the seminal fluid would become contaminated. It was not because the bacillus could not be found in the spermatozoa that it followed that the latter could not be in some way affected so that it would transmit the disease to the offspring. Let them take, for example, some of the various admittedly hereditary diseases, viz., side-bone, spavin, cataract, etc., the microscope could not detect in the spermatozoa the cause of the reproduction of the diseases in the offspring, yet they knew the fact that the diseases were hereditary. Some attempted to explain the fact by stating that it was the formation of the parts that was hereditary, and these being defective in this manner (weak) predisposed the offspring to the diseases. This he (the speaker) stated most emphatically was not the case, as frequently the structures involved were apparently strong and beautifully formed, which at once contradicted the explanation given. However, for practical purposes, it would be well that tuberculosis should be treated as an hereditary disease; it was on account of the seriousness of dealing with it that the speaker raised the protest against classifying the disease as non-hereditary. With regard to the various other matters relative to bacteriology, especially concerning tuberculosis, if all they heard were correct, the wonder was how any living thing existed except bacteria of various sorts. Of course the answer to this was that such would be the case—were it not that the bacteria themselves did not agree—one killing the other. Indeed, the most peculiar part was that the dead ones, or an exudate from them, killed the survivors. Only for that, there would be no chance of man in his present condition existing on this globe.

Having said so much which was apparently deprecatory to bacteriology, he wished it to be thoroughly understood that in his opinion the study of that subject had thrown a great light upon facts previously well known, and no doubt would still do much more to enlighten them as to the cause and treatment of disease. However, they had not advanced in this direction from the time that Jenner discovered the usefulness of vaccination; of course they had many new prophylactic serums, but the microscope failed to let them see what was in them to make them act as they did. He objected to theories built upon the mere seeing under the high power of the microscope objects which they, comparatively speaking, knew nothing about, especially if such theories were opposed to well-established facts, and were dangerous to accept as correct.

He again thanked Prof. Mettam for his able paper, which condensed in a very clear manner a very large amount of highly interesting and useful knowledge.

Prof. METTAM would deal with Mr. McKenny first. In his usual style he had brought in some reference to "predisposition." Well, he (Prof. Mettam) had never inflicted that word upon the meeting at all during the evening; it was conjured up in Mr. McKenny's fervid imagination. As regards hereditary transmission as in sidebone, he denied that spermatozoa had side-bones at all. As regards certain theories advanced, he had really been quoting from some of the very latest contributors on the important question of tuberculosis and its methods of transmission, and so much were they as a result up to date that he might mention the papers came into his hand on the preceding Saturday week. He only thought it his duty to bring that question forward because he believed himself that to successfully deal with it the procedure should be on the lines laid down by Calmette and Guerin, Roux and Vallée, following upon the proceedings of Behring. He knew that at the present time there were thousands of cattle in Germany and some in the United States that were immune to tuberculosis, and that would withstand the attacks of the most virulent bacilli; and if that was not immunity, he would like to know what it was.

Mr. HEDLEY: How long are they immune?

Prof. METTAM: For the remainder of their natural lives. As regards what some of them might have noticed in the daily papers of Saturday, wherein it was stated by Calmette and Guerin that they were prepared to guarantee children immunity from tuberculosis; the statement was made specifically that if they were able to give the special bacilli to young children a few days old, and that they had not in the meantime been exposed to infection, after about four months they would be immune to the disease. If that should prove the case, he maintained they had made a great stride forward in the direction of combating the inroads of tuberculosis (Applause).

As regarded his references to tuberculous semen—Mr. Hedley asked him had it been discovered. It had, and it was not so very remarkable. One testis might be functional and the other tuberculous. Furthermore, he himself had discovered it—indeed, he had a specimen in the laboratory—a case of tuberculous testis in a monkey.

He had never come across a case of tuberculosis in a rabbit, but he had seen numerous cases of disease of the liver due to coccidia.

Mr. Byrne in his usual jocular way had referred to what he considered the absurdity of putting farmers to the expense of Pasteurising plants, and so on. What he had said was that they might be advised to have the milk *boiled* for their food supply to young horses, so as to avoid the risk of infection from that source. He hoped Mr. Pallin would give him an opportunity of making a post-mortem examination of some of the cases he had referred to, in order to see if there were any connection between "joint-ill" and tuberculosis. He thought it was something else. Tuberculosis was fairly common in equines—indeed within the past six months he had three cases of it from one practitioner in town—but he had no experience of cases occurring among horses of the tender age referred to by Mr. Pallin.

As regards Prof. Wooldridge's remarks about the transmission of the tuberculous virus—in some cases it probably got shut up by the time it reached the lower part of the neck. In the region of the pharynx it might break down and be swallowed, giving rise then to intestinal infection; of course, it might extend to the thorax by the lymphatic vessels of the neck. At any rate, it was an opinion generally put forward that tuberculosis occurring in the lungs arose from backward infection.

He thanked them very much for their kind reception of his paper. He felt it was very incomplete, but then the subject was such a wide one that it would take him a long to give all the facts known about it (Applause).

## MEAT INSPECTION IN BELFAST.

The honorary secretary of the Belfast Provision Curers' Association has issued and sent to the members of the Belfast Corporation an important document on the question of meat inspection, especially in reference to pork. He points out that he knows of no evidence based on statistics taken in Ireland which would support the theory put forward by the 1898 Royal Comission on Tuberculosis (Sir Herbert Maxwell's Commission), in which it is stated that "in view of the greater tendency to generalisation of tuberculosis in the pig, we consider that the presence of tubercular deposit in any degree should involve seizure of the whole carcase and the organs." This has not been verified by actual inspection of swine in the North of Ireland, and the experience of the local provision trade is entirely against it. It is noteworthy that while pig-raising is a most important industry in Ireland, yet when it comes to the selection of a Royal Commission to devise practical measures for the control of tuberculosis in the meat-supply not a single representative from Ireland is appointed, nor, indeed, anyone with any practical acquaintance with the provision curing trade. It is a pity that this was so, as the omission has evidently left a feeling of soreness. The report of the secretary of the Belfast Provision Curers' Association goes on to point out that it is very remarkable that the Royal Commission made a distinction between tuberculous pigs and tuberculous cattle, recommending that in the case of cattle the carcase, if otherwise healthy, should not be "condemned" but only such part of it as contained tuberculous lesions, and only in case of advanced tuberculosis was the entire carcase of cattle to be destroyed. This distinction, the Association affirms, is not recognised in the practice of other countries, pigs, and cattle being treated alike.

The report urges that much has been learned with regard to tuberculosis since 1898, the date of Sir Herbert Maxwell's Commission. A Committee of the House of Commons took evidence in connection with the Tuberculosis (Animals) Compensation Bill (1904), and of all the witnesses who gave evidence in 1904 not one supported the recommendations of the Maxwell Commission as regards pigs. Professor Mattnew Hay of Aberdeen, stated that only two pigs out of 2000 slaughtered in the previous year in that city were condemned. It is obvious that Aberdeen, in the case of the pig, does not follow the recommendations of the Royal Commission. Before the same Committee Dr. R. S. Marsden, Birkenhead, in reply to the question "Do you as a scientific man say that an animal with even the smallest amount of tubercle can be fit for human food or as fit as an animal that has not tuberculosis at all?" answered "Yes, I think so. I think to some extent there was exaggeration in the minds of some of us when we originally began. I think if the dangers were as great as at first supposed there would have been far greater evils than have occurred. Therefore, I do not think it right to condemn on the merest speck of tubercle a whole carcase. I think it a matter in which a man must use common sense as well as scientific knowledge, and I lay great stress on common sense." Mr. J. King, veterinary inspector for the Corporation of London, stated "as his own personal view, with his experience of many years, that Sir Herbert Maxwell's Commission was too hard upon the pig." "Pigs," he added, "ought to be dealt with in the same way as cattle—that is to say, that tuberculosis should be treated as a localised disease." The superintendent of the Birmingham Corporation markets (Mr. F. H. Edwards) stated that in Birmingham out of 175,000 pigs slaughtered the number of condemnations was 291. The Birmingham authorities did not follow, he said, the recommendations of the Royal Commission (Sir Herbert Maxwell's) in the case of pigs. "We do not," he said, condemn the whole carcase where it is a mere local affection with regard to pigs." The chairman of the Heath Committee of the Corporation of Glasgow, Bailie Anderson, J.P., submitted statistics to show that during 1905 53,483 swine were slaughtered in Glasgow. Of these 2132 were found to be affected with tuberculosis, 152 were subsequently passed, 75 were totally destroyed, while 1905 pigs were partially destroyed (heads only), the remainder of the carcase being handed back to the owner. Under the Belfast system of inspection, where there is no classification as to the degree of tuberculosis, instead of 75 pigs being totally destroyed, as in Glasgow, there would have been 2132. Bailie Anderson informed the committee that the Glasgow inspection "was not quite so stringent as the Commission on Tuberculosis recommended in the case of pigs." All this evidence, which has accumulated since Sir Herbert Maxwell's Commission sat, ought, the Belfast Provision Curers' Association thinks, to receive proper attention.

The secretary of the association next submits an actual test carried out on four pigs bought in Cookstown market on July 7th, 1906, and condemned by the inspector of the Belfast Corporation to total destruction as being unfit for food. These were carefully examined by Professor W. St. Clair Symmers of Queen's College, Belfast. Three of the animals showed tuberculous changes in certain of the neck glands and the fourth did not contain any tuberculous glands at the time he saw it. Neither by the naked eye nor microscopically could Professor Symmers detect evidence of tuberculosis in the flesh of these animals, nor in the juices obtained from the flesh by the most rigorous method known to bacteriologists. He says in his report: "I conclude that that the flesh of these four animals was free from tuberculous germs, that the tubercle was limited to the neck glands, and that the destruction of the non-tuberculous portions of the carcase was unnecessary. I may add that proper cooking will easily destroy any tuberculous germs if such should happen to be present, but in the flesh (as distinct from the glands) of the four

pigs here in question there were no tubercles to be destroyed."

Reference in the report is then made to the measures adopted in Germany to protect the meat-supply and Professor Ostertag, of the Veterinary High School at Berlin, is quoted as stating in his "Handbook of Meat Inspection" that "at present the view is generally entertained that in undoubted cases of local tuberculosis the meat is harmless, while in generalised cases it is harmful," and that "the assumption of the harmlessness of meat in cases of undoubted local tuberculosis will probably remain for all time as an immutable dogma of meat inspection." This is the view which the Belfast Provision Curers' Association ask the Belfast Corporation to adopt, in line with the practice of the great English cities mentioned and with Germany itself, where the most severe restrictions are in force in order to protect a population that eats uncooked meat. Professor M'Fadyean is quoted as saying before the Royal Commission of 1896: "I feel quite satisfied that if tuberculosis were absolutely eradicated from the cattle of this country it could not sensibly affect the percentage of tuberculosis among human beings." And, again: "I doubt whether there are ten people in this country in the year who contract tuberculosis through meat; I think even one might doubt whether there is one." Again, Sir Charles Cameron stated before the same Royal Commissioners: "If I were put into the witness-box I would not be able to swear I ever knew anyone who got tuberculosis from either meat or milk, and there are few people who could do so." In Prussia during 1902 (latest statistics available) there were slaughtered 3,909,778 pigs; of these 103,192 were found to be tuberculous but only 4604 were condemned to total destructon. The carcases of 93,825 were allowed to be sold after removal of affected organs and tissues. Under our Belfast system the whole 103,192 carcases would have been totally destroyed. If the farmers and pig feeders of Prussia alone had been subject to the meat inspection rules of Belfast their loss from pork destroyed, calculated at present prices, would have been £380,000 to £400,000 per annum over and above what their highly-trained inspectors actually found necessary to condemn, though taking measures to protect the food-supply of a people accustomed to eat pork in large quantities absolutely uncooked. Why in Belfast, where the population uniformly cook their ham and bacon, should precautions be used to a degree beyond anything conceived in Germany?

An extract from the regulations governing the meat inspection of the United States Department of Agriculture, dated June 30th, 1906, is published as an appendix to the pamphlet. It runs as follows:—

*Tuberculosis.*—All carcases affected with tuberculosis and showing emaciation shall be condemned. All other carcases affected with tuberculosis shall be condemned, except those in which the lesions are slight, calcified, or encapsulated, and are confined to the tissues indicated in any one of the following five paragraphs, or to a less number of such tissues, and excepting also those which may under Paragraphs (6) and (7) below, be rendered into lard or tallow. 1. The cervical lymphatic glands and two groups of visceral lymphatic glands in a single body cavity, such as the cervical, bronchial, and mediastinal glands: or the cervical, hepatic, and mesenteric glands. 2. The cervical lymphatic glands and one group of visceral lymphatic glands and one organ in a single body cavity, such as the cervical and bronchial glands and the luugs, or the cervical and hepatic glands and the liver. 3. Two groups of visceral lymphatic glands and one organ in a single body cavity, such as the bronchial and mediastinal glands and the lungs, or the hepatic and mesenteric glands and the liver. 4. The cervical lymphatic glands and one group of visceral lymphatic glands in each body cavity, such as the cervical, bronchial, and hepatic glands. 5. Two groups of visceral lymphatic glands in the thoracic cavity, and one group in the abdominal cavity, or one group of visceral lymphatic glands in the thoracic cavity and two groups in the abdominal cavity, such as the bronchial, mediastinal, and hepatic glands, or the bronchial, hepatic, and mesenteric glands. 6. Carcases affected with tuberculosis in which the lesions of the disease are located, as described in any one of the preceding five paragraphs, but are slight and in a state of caseation or liquefaction necrosis, or surrounded by hyperæmic zones, and also those in which slight, calcified, or encapsulated lesions are found in more visceral organs or more groups of visceral lymphatic glands than are specified in any one of the preceding five paragraphs, may be rendered into lard or tallow, after the diseased parts are removed. The carcases shall be cooked by steam at a temperature not lower than 220 F. for not less than four hours. 7. Carcases in which the cervical lymphatic glands, one organ, and the serous membrane in a single body cavity, such as the cervical lymphatic glands, the lungs, and the pleura or the cervical lymphatic glands, the liver, and the peritoneum, are affected with tuberculosis may be rendered into lard or tallow, after the diseased parts are removed. The carcases shall be cooked by steam at a temperature not lower than 220 F. for not less than four hours. 8. All condemned carcases, parts of carcases, or organs showing lesions of tubercluosis shall be deposited in receptacles provided for that purpose and shall either be tanked at once or be locked in the "condemned" room until such time as an employee of the department can see that they are placed in the tank. 9. All heads and other parts showing lesions of tuberculosis shall be condemned.

The secretary of the Belfast Provision Curers' Association certainly makes out a strong case for asking that the meat regulations of Belfast shall be in conformity with the requirements dictated by scientific authority and prevalent elsewhere.—*The Lancet.*

## Colic or Ill Usage.

On Wednesday at Bow County Court, Charles Goldsmith, of St. Stephen's Road, Bow, brought an action to recover £50 damages for the loss of a horse from Mr. H. Mack, senior, a milk dealer, of Beale Road, Bow.

It appeared that on the 22nd June, the plaintiff received a telephone message from the defendant asking for the loan of a light horse for a few hours. Plaintiff let him have a grey mare called Gypsy. It was taken out of the stable at five o'clock in good condition, but when it was returned some three hours later it was in a distressed condition and it was very evident that it had been disgracefully handled. She had several weals on her side. She was trembling in every limb, and showed traces of having been over-driven. A "vet." was called in, and men remained up with the mare all night. However, she died the next day, and a post-mortem examination showed that she had twisted one of the small guts.

The whole point at issue was whether or not the injury had been brought about during the time that it was in the possession of defendant. He called evidence to show that she had been driven only a few miles, and as she was drawing a small load of silvered glass, it was very necessary that she should go slowly.

Plaintiff's veterinary surgeon said he was of opinion that the mare died of twisted gut brought about by being over-driven, but the defence was that she had a sudden attack of colic and in her agony twisted her gut.

His Honour said that if the horse was in that condition when it was returned it was perfectly clear that it was over-driven by the defendant. He could come to no other conclusion than that the horse was improperly treated while in the defendant's possession, and he should award the plaintiff £25 and costs.

[A shocking miscarriage of justice.—Ed.]

DISEASES OF ANIMALS ACTS 1894 TO 1903. SUMMARY OF RETURNS.

| Period. | Anthrax. | | Foot-and-Mouth Disease. | | Glanders (including Farcy) | | Rabies. Cases Confirmed. | | Sheep Scab. | Swine Fever. | |
|---|---|---|---|---|---|---|---|---|---|---|---|
| | Out-breaks | Ani-mals. | Out-breaks | Ani-mals. | Out-breaks | Ani-mals. | Dogs. | Other | Out-breaks | Out-breaks. | Slaughtered * |
| GT. BRITAIN. Week ended Sept. 22 | 8 | 10 | | | 18 | 27 | | | 2 | 22 | 183 |
| Corresponding week in 1905 .. | 21 | 37 | | | 17 | 39 | | | 7 | 10 | 45 |
| Corresponding week in 1904 .. | 15 | 24 | | | 45 | 63 | | | 6 | 15 | 100 |
| Corresponding week in 1903 .. | 9 | 12 | | | 32 | 64 | | | 3 | 25 | 253 |
| Total for 38 weeks, 1906 .. .. | 662 | 963 | | | 806 | 1512 | | | 308 | 831 | 4680 |
| Corresponding period in 1905 .. | 716 | 993 | | | 920 | 1587 | | | 672 | 620 | 2870 |
| Corresponding period in 1904 .. | 722 | 1137 | | | 1172 | 2071 | | | 1083 | 1032 | 4808 |
| Corresponding period in 1903 .. | 579 | 881 | | | 1119 | 1869 | | | 1196 | 1170 | 6063 |

Board of Agriculture and Fisheries, Sept. 25. 1906.

| | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|
| IRELAND. Week ended Sept. 15 | .. | .. | .. | .. | .. | .. | .. | .. | .. | 2 | 5 |
| Corresponding Week in 1905 .. | .. | .. | .. | .. | .. | 8 | .. | .. | .. | 2 | 26 |
| Corresponding Week in 1904 .. | .. | .. | .. | .. | .. | .. | .. | .. | 1 | 12 | 50 |
| Corresponding Week in 1903 .. | .. | .. | .. | .. | .. | .. | .. | .. | 3 | 7 | 52 |
| Total for 37 weeks, 1906 .. .. | 3 | 7 | .. | .. | 6 | 14 | .. | .. | 165 | 80 | 886 |
| Corresponding period in 1905 .. | 3 | 5 | .. | .. | 16 | 52 | .. | .. | 232 | 130 | 1319 |
| Corresponding period in 1904 .. | 3 | 3 | .. | .. | 9 | 30 | .. | .. | 374 | 266 | 3356 |
| Corresponding period in 1903 .. | 2 | 3 | .. | .. | 2 | 3 | 2 | .. | 403 | 255 | 3066 |

Epizootic Lymphangitis: Week ending Jan. 27, 1906, 1 case.

Department of Agriculture and Technical Instruction for Ireland, (Veterinary Branch), Dublin, Sept. 20, 1906.

NOTE.—The figures for the Current Year are approximate only. * As Diseased or Exposed to Infection

### THE ARMY VETERINARY SYSTEM IN INDIA.

Lord Kitchener is revising the Army veterinary system. He expressed astonishment at finding two different systems with two different bodies of veterinary doctors, one for peace and one for war. A frequent result which this dual system has had on the service in past years has been that veterinary doctors whose experience has been limited to horses have been placed in charge of a couple of thousand camels.

Lahore, Sept. 21.

## Personal.

DR. SALMON'S WORK IN URUGUAY. A letter from Dr. Salmon contains the information that he has not engaged to do any sanitary work at all—that the position which he has accepted is that of Director of the Veterinary School of the University of Montevideo. He further states that he has not yet been informed from whence his faculty will be recruited, and that the statement that he would take his staff with him from this country was without foundation.—*American Veterinary Review.*

At Plympton Show, on Wednesday, 19th inst, Mr. P. G. Bond's "Ralph" was placed third in the jumping competition for horses under 15 h.h.

Much of the success of the show was due to the secretarial genius of Mr. P. G. Bond.—*The Western Independent.*

### Obituary.

DALGLEISH.—Mandalay, Upper Burma, on the 9th August, Lily, the beloved wife of Capt. A. J. Dalgleish, A.V.C.

### THE COMMISSION ON VIVISECTION.

Sir,

It is gratifying to see that a veterinary surgeon has been chosen as one of the members of the Commission.

Possibly veterinary knowledge may be further utilised by other members of the profession being summoned to give evidence during the enquiry—and if the veterinary witnesses are as well chosen as the Veterinary Commissioner has been, it is certain that good results will follow.

But I think there is another direction in which some of us might do good work after the members of the Commission have completed their labours, if the point were brought under their notice during their deliberations.

Whatever changes in the law, if any, result from this enquiry, two things may be safely predicted. In the first place, the practice of experimentation upon living animals will not be altogether abolished. In the second it will continue to be, as at present, restricted and supervised to a greater or less extent. Inspectors will still be appointed to see that whatever regulations are made are adhered to, as has already been the case for many years. But up to the present I believe those inspectorships have always been held by medical men—would not they be better filled by veterinarians?

A well selected veterinary surgeon would be quite as good a judge of the advisability or necessity of an experiment or series of experiments as any medical man. He would certainly be a much better judge than his human *confrère* when dealing with another point, viz., the ways and means of ensuring that this work, which must necessarily, as we all know, be cruel work, should at least be attended by as little cruelty as possible.

The veterinary surgeon is recognised in every police-court as the best judge of what is, or is not, cruelty to animals. To my mind, the duty of supervising experiments on ani-

mals should fall to his share, as one of the regular offices which his special knowledge and training render him the fittest person to fulfil. I believe that most members of the profession will agree to this, and if the question were to be fairly raised while the Commission is sitting, it is just possible that the alteration might be effected.—Yours truly,

"COUNTRYMAN."

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A DISEASE OF THE HORSE SIMULATING FARCY, by Capt. F. S. H. BALDREY and G. D. MARTIN, I.C.V.D.

COMMUNICATIONS AND PAPERS RECEIVED—Messrs. A. E. Mettam, J. L. Barling, G. W. Sturgess, H. P. Standley, F. E. P.

*Veterinary Report, 1905* (Ceylon), *The Yorkshire Post*, *The Newcastle Daily Journal*, *The Irish Independent*.

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## Veterinary Societies—Addresses.

***Alterations for this list must be duly notified by the Secretaries***

BORDER COUNTIES V.M.S.
*Pres*: Mr. J. W. Hewson, M.R.C.V.S., Wigton
*Hon. Sec. (pro tem.)*: Mr. F. W. Garnett, M.R.C.V.S., Dalegarth, Windermere
*Meetings*, Second Friday of Feb., June, and October

CENTRAL V.M.S.
*Pres.* Mr A. L. Butters, M.R.C.V.S., 31 South Wharf Road, Paddington, W.
*Hon. Sec*: Mr. H. A. MacCormack, M.R.C.V.S., 122 St. George's Avenue, Tufnell Park, N.
*Meetings*, First Thursday in each month, except August and September, 10 Red Lion Square, Holborn, at 7 p.m.

CENTRAL CANADA V.A.
*Hon. Sec*: Mr. A. E. James, Ottawa

CENTRAL V.A. OF IRELAND.
*Pres.* Mr. M. J. Cleary, M.R.C.V.S., Kilpatrick, Mullingar
*Hon. Sec*: Mr. J. J. Vahey, M.R.C.V.S., Ballinrobe
*Treas*: Mr. J. F. Healey, M.R.C.V.S., Midleton

EASTERN COUNTIES V.M.A.
*Pres*: Mr. Arthur S. Auger, M.R.C.V.S., Saxmundham, Suffolk
*Hon. Sec. & Treas*: Mr. H. P. Standley, M.R.C.V.S. Wymondham
*Meetings*, Second Tuesday, Feb. and July

GLASGOW V.M.S.
*Pres.* Principal McCall.
*Hon. Sec.* Mr. James Lowther

VET. MED. ASSN. OF IRELAND.
*Pres*: Mr. J. McKenny, M.R.C.V.S. 116 Stephens-green-west, Dublin
*Hon. Treas*: Mr. M. Hedley, F.R.C.V.S., 6 Royal Terrace West, Kingstown
*Hon. Sec.* Mr. Chas. Allen, F.R.C.V.S., 43 Rutland Square, Dublin

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*Hon. Sec.*: Mr. G. H. Locke, M.R.C.V.S. Grosvenor-street, Manchester
*Meetings*, 1st Thursday in April, June, Sept., & Dec.

LINCOLNSHIRE V.M.S.
*Pres.* Mr. R. W. Knowles, M.R.C.V.S., Wisbech
*Hon. Sec*: & *Treas*: Mr. T. W. Turner, M.R.C.V.S., Sleaford
*Meetings*, Second Thursday Feb., June, and October

LIVERPOOL UNIVERSITY V.M.S.
*Pres*: Prof. Boyce, F.R.S.
*Hon. Sec. & Treas*: Jno. T. Share-Jones, University, Liverpool
*Meetings*, May, July, October, January.

VET. ASSN. OF MANITOBA.
*Hon. Sec*: Mr. F. Torrance, Winnipeg

MIDLAND COUNTIES V.M.A.
*Pres*: Mr. W. W. Grasby, M.R.C.V.S., Daventry
*Hon. Sec*: Mr. H. J. Dawes, F.R.C.V.S., Camden House, High-st., West Bromwich
*Meetings*, Second Tuesday, Wednesday, Thursday, and Friday alternately in Feb., May, Aug. and Nov.

NATIONAL VET. ASSOCIATION.
*Pres*: Mr. W. Shipley, F.R.C.V.S., Gt. Yarmouth
*Sec*: Mr. William Hunting, F.R.C.V.S.
*Treas*: Mr. F. W. Wragg, F.R.C.V.S., Whitechapel, London.

NATIONAL VETERINARY BENEVOLENT & MUTUAL DEFENCE SOCIETY.
*Pres*: Mr. W. A. Taylor, F.R.C.V.S., Brick-st, Manchester
*Treas*: Mr. J. B. Wolstenholm, F.R.C.V.S., Quay-street, Manchester
*Hon. Sec*: Mr. Sam. Locke, M.R.C.V.S. Grosvenor Street, Oxford-st., Manchester

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*Hon. Sec*: Mr. E. R. Gibson, M.R.C.V.S. 25 Marlborough-street, Seaham Harbour
*Meetings*, Third Friday, Feb., May, Aug. and Nov.

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*Sec. & Treas*: Mr. Clement Baxter, M.R.C.V.S., Elgin

NORTH WALES V.M.A.
*Pres*: Mr. R. Jones, M.R.C.V.S., Towyn, Merioneth
*Hon. Sec.* T. C. Howatson, M.R.C.V.S., St. Asaph
*Meetings*, First Tuesday, March and September

ONTARIO V.A.
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*Sec*: & *Treas*: Mr. C. H. Sweetapple, V.S., Toronto, Ontario

PROVINCE OF QUEBEC V.M.A.
*Hon. Sec*: Mr. Gustave Boyer, Rigand, P.Q.

ROYAL COUNTIES V.M.A.
*Pres*: Mr. H. G. Simpson, F.R.C.V.S., Windsor
*Hon. Sec. & Treas*: Mr. Percy J. Simpson, M.R.C.V.S., Kendrick House, Maidenhead
*Meetings*, Last Friday, Jan., April, July and Nov.

ROYAL SCOTTISH V.S.
*Pres*: Mr. Reid, M.R.C.V.S, Auchtermuchty.
*Hon. Sec*: Mr. W. D. Fairbairn, M.R.C.V.S., Cupar, Fifeshire

ROYAL VETERINARY COLLEGE M.A.
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*Hon. Sec*: Mr. T. C. Graves, M.R.C.V.S.
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SCOTTISH METROPOLITAN V.M.S.
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*Hon. Sec*: Mr. W. Awde, F.R.C.V.S., Stockton-on-Tees.
*Meetings*, First Friday, Mar., June, Sept. and Dec.

SOUTHERN COUNTIES V.S.
*Pres*: Mr. K. Stuart, M.R.C.V.S., Hove
*Hon. Sec*: Mr. J. Alex. Todd, M.R.C.V.S., Worthing
*Hon. Treas*: Mr. E. W. Baker, M.R.C.V.S., Wimborne
*Meetings*, Last Thursday, Mar., June and Sept.

TRANSVAAL V.M.A.
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*Hon. Treas*: Mr. J. H. Bell, M.R.C.V.S., D.V.S., Krugersdorp
*Hon. Sec*: Mr. T. H. Dale, M.R.C.V.S., D.V.S., Potchefstroom

WESTERN COUNTIES V.M.A.
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*Hon. Sec.* Mr. W. Ascott, M.R.C.V.S., Bideford
*Hon. Treas*: Mr. P. G. Bond, M.R.C.V.S., Plymouth
*Meetings*, Third Thursday, March, July and November

WEST OF SCOTLAND V.M.A.
*Pres*: Mr. James Weir, F.R.C.V.S., 24 Pollock st., Glasgow
*Joint Hon. Secs*: & *Treasrs*: Messrs. Hugh Begg and John R. McCall, Vety. Coll
*Meetings*, Second Wednesday, May, Oct. and January.

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*Pres*: Mr. A. W. Mason, F.R.C.V.S., North Street, Leeds
*Hon. Sec*; Mr. J Clarkson, M.R.C.V.S., Garforth, nr. Leeds
*Hon. Treas*: Mr. J. E. Scriven, M.R.C.V.S., Tadcaster